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DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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Copy to
M/035/002

November 13, 1998

TO: Minerals File

FROM: Tony Gallegos, Senior Reclamation Specialist

RE: Site Inspection, Kennecott Utah Copper Company (KUCC), Tailings Expansion, M/035/015, Salt Lake County, Utah

Date of Inspection: November 3, 1998
Time of Inspection: 0900 - 1245
Conditions: partly cloudy, cool
Participants: Bob Dunne, Paula Doughty, Abbi Davidson, Nick Tzourtzouklis, KUCC; John Whitehead, DWQ; Wayne Hedberg, Tony Gallegos, Tom Munson, DOGM

Purpose of Inspection: To examine the current status of the tailings expansion project

We first met in the main office for the tailings expansion where Bob Dunne gave us an overview of the project events of this previous year. One event was the structural failure of a portion of the embankment for the existing tailings impoundment which occurred on February 3, 1998. The failure was linked to the construction of some stabilizing berms on the NE corner of the existing impoundment. The failure resulted in a debris or mud flow of a portion of the embankment materials. The mud flow was contained within the starter dike created as part of the tailings expansion and tailings from the interior of the embankment were not released. The design of the stabilizing berm has been modified to prevent another failure. The damaged portion of the embankment has been repaired and work to increase the stability of this area is still underway. Emergency repairs of the damaged embankment included the insertion of vertical wicks and an intensive truck haulage of replacement fill. Dam Safety has been the main agency handling this embankment issue.

Another event was the redesigning of the decant barge. The original design would not function adequately when the pumps were fully operational. The new design will not be in place for several months. A number of stationary pumps have been installed to handle decant water until the new decant barge is in place.

Another event was the amount of settling at the east cyclone station. The amount of settling has exceeded the projected amount causing some stresses on the pipe connections at the edge of the cyclone pad area. This pad was preloaded and allowed to sit for over 12 months to minimize additional settling, however, this appears to have been inadequate. Most pipe connections which were being stressed have been replaced with flexible hose connections.

The West Cyclone station is fully operational and is currently producing underflow materials. The underflow materials are being used to stabilize the NE corner of the existing

impoundment and in the construction of the cells in the expansion area. The pumps used to move the underflow material from the cyclone station to the distribution points are experiencing excessive wear. KUCC is currently trying several different pump brands and designs to determine the most appropriate pump for the system.

Diversion berms were constructed off site as a result of earthquake preparedness. KUCC constructed a berm to the south of the southeast corner of the existing impoundment and another berm to the east of the southeast corner. The berm location and sizes were based on studies projecting the possible flow path of the tailings due to a significant seismic event and failure of the embankment.

After the office presentation we toured the existing tailings impoundment and tailings expansion. We first visited the West Cyclone station for a walk through tour of the facility. We viewed the main cyclone circuits, pipelines and pump systems used to circulate underflow materials. KUCC's recently purchased swamp buggy was at this site currently outfitted with a hydroseeding system.

We next drove around the existing tailings impoundment in a counterclockwise direction. Sludges were being mixed with soils for placement in the repository on the west side. Work was currently underway on the north-south reclaim dike on the southwest corner of the existing tailings impoundment. Some portions of the tailings embankment along the west side had recently been pitted and seeded. Portions of the embankment which had recently been hydroseeded were visible as green areas due to the mulch included in the hydroseed mix. Portions of the sloped embankment on the south end had been scalped to provide material for construction, and to further reduce the pressure on this portion of the embankment.

We proceeded past the east cyclone station and through the northeast corner of the embankment where the failure had occurred. The sediment pond on the east side of the tailings impoundment currently contained water. Wicks were visible at the surface in one portion of the northeast embankment. At the northeast corner of the embankment work was proceeding on the stabilizing berm and several deposition cells in the expansion area. The initial deposition of coarse underflow in each cell is a critical step in the process. The cell floor needs to be adequately sloped to allow for even placement of the underflow material and provide adequate drainage for the excess water.

We then proceeded to a pump station on the north end of the expansion. This is one of several stations which will distribute underflow materials or whole tailings to the expansion area. This station was not active at this time.

The inspection ended back at the main tailings facility where KUCC provided lunch. A copy of an aerial photo of the tailings facilities taken April 22, 1998 was provided to the Division. Mr. Dunne informed us, that in the near future, after the north expansion area becomes operational, Mr. Nick Tzourtzouklis (phone 569-6605) would be the main contact for the tailings expansion.

Note: the Division agreed to provide Bob Dunne with information regarding the remaining reclamation and bond money being held for the Pine Canyon Project.

jb
cc: file m/035/002
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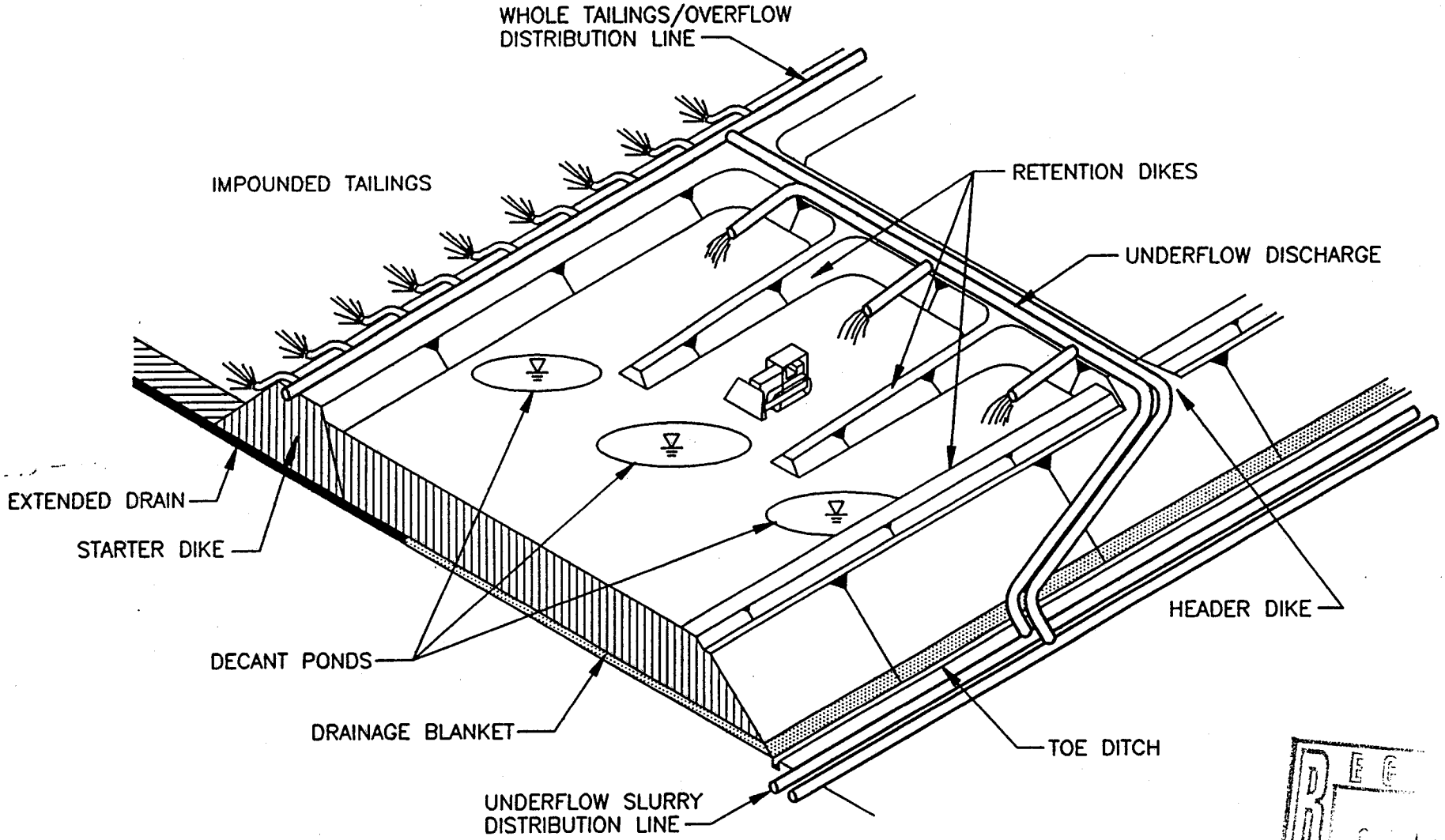

NOT TO SCALE

Job No. :	23362G
Prepared by :	R.R.D.
Date :	1/11/95

HYDRAULIC DEPOSITION CELL CONSTRUCTION

FIG. 2.5

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